

Preliminary Amendment
Continuation Application of U.S.S.N. 09/599,260
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Applicants submit that no new matter is introduced by these amendments, support for the amendment and new claims being found in the specification and claims as originally filed.

If the Examiner believes that a telephone conversation with Applicants' attorney would expedite allowance of this application, the Examiner is cordially invited to call the undersigned attorney at (617) 310-8327.

A check for \$3,156.00 for the filing fee is enclosed. Please charge any other fee occasioned by this paper to our Deposit Account No. 20-0531.

Respectfully submitted,

Date: June 25, 2003
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MARKED-UP VERSION OF PARAGRAPH OF SPECIFICATION

Page 1, lines 4–6.

This application is a continuation application of Serial No. 09/599,260 filed June 22, 2000, which is a continuation-in-part application of Ser[.]ial No. 09/289,514 filed April 9, 1999, which claims priority from provisional application Ser[.]ial No. 60/081,301 filed April 10, 1998[9].

MARKED-UP VERSION OF PARAGRAPH OF ABSTRACT

Page 46, lines 2–23.

[A SiGe monocrystalline etch-stop material system on a monocrystalline silicon substrate. The etch-stop material system can vary in exact composition, but is a doped or undoped $\text{Si}_{1-x}\text{Ge}_x$ alloy with x generally between 0.2 and 0.5. Across its thickness, the etch-stop material itself is uniform in composition. The etch stop is used for micromachining by aqueous anisotropic etchants of silicon such as potassium hydroxide, sodium hydroxide, lithium hydroxide, ethylenediamine/pyrocatechol/pyrazine (EDP), TMAH, and hydrazine. These solutions generally etch any silicon containing less than $7 \times 10^{19} \text{ cm}^{-3}$ of boron or undoped $\text{Si}_{1-x}\text{Ge}_x$ alloys with x less than approximately 18. Alloying silicon with moderate concentrations of germanium leads to excellent etch selectivities, i.e., differences in etch rate versus pure undoped silicon. This is attributed to the change in energy band structure by the addition of germanium. Furthermore, the nondegenerate doping in the $\text{Si}_{1-x}\text{Ge}_x$ alloy should not affect the etch-stop behavior. The etch-stop of the invention includes the use of a graded-composition buffer between the silicon substrate and the SiGe etch-stop material. Nominally, the buffer has a linearly-changing composition with respect to thickness, from pure silicon at the substrate/buffer interface to a composition of germanium, and dopant if also present, at the buffer/etch-stop interface which can still be etched at an appreciable rate. Here, there is a strategic jump in germanium and concentration from the buffer side of the interface to the etch stop material, such that the etch-stop layer is considerably more resistant to the etchant. This process and layer structure allows for an entire range of new materials for microelectronics. The etch-stop capabilities introduce new novel processes and structures such as relaxed SiGe alloys on Si, SiO_2 , and a SiO_2/Si . Such materials are useful for future strained Si MOSFET devices and circuits.]

A semiconductor structure including a uniform etch-stop layer. The uniform etch stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with 7×10^{19} boron atoms/cm³. A method for forming a semiconductor structure includes forming a uniform etch-stop layer providing a handle wafer, and bonding the uniform etch-stop layer to

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the handle wafer. The uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with 7×10^{19} boron atoms/cm³.